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IX. *A Letter from the Reverend Henry Miles D. D. to Mr. Henry Baker F. R. S. concerning the Difference of the Degrees of Cold marked by a Thermometer kept within Doors, or without in the open Air.*

Dear Sir,

Read Dec. 10. 1747. **I** SEND you herewith an Extract from my Register of the Weather, shewing the State of my Barometer and Thermometers, for some Days of last Week: in which you will observe a sudden Change of the Temperature of the Air, particularly on *Thursday* Morning the 3d Instant, and, by the same, you may see the little Use a Thermometer is of, when kept within-doors, to determine the State of the Air abroad, as to Heat or Cold.

I have two Thermometers filled with *Mercury*, and of the same Construction, made by the late Mr. *Sifson*, in the *Strand*. The one is placed without my Chamber-Window, in a North-cast Situation, under Covert, contriv'd to admit a free Passage of the Air, but to keep off Sun and Rain; the other hangs within the Window, about three Feet from the former, where the Sun never falls on it: The Room is constantly occupied, as a Bed-Chamber, but has had no Fire in it this Season.

It appears by the adjoining Table, that on *Tuesday* the 1st instant, at 8 in the Morning, the Thermometer without stood at 17 Degrees above 0. or freezing Point; that within at 14. At 9 at Night, that without was at 0. and that within at 12 above

o. So that in the Space of 13 Hours the former had fallen 17 Degrees, the latter but 2. For the other Particulars, relating to the Barometer, Wind, and Weather, I refer to the Table.

As the Barometer had been for a good while past subject to sudden considerable Variations, I suspected the severe Cold on *Wednesday* Night and *Thursday* Morning would not continue long: Accordingly, upon my observing the Thermometer without at 4 in the Morning, I found it at $\frac{9}{10}$ nine Degrees below the freezing Point, that within at $\frac{5}{10}$ five Degrees above freezing Point. But at 8 o' the Clock the same Morning, I found the Thermometer without at $3\frac{1}{2}$ three Degrees and a half above freezing, and that within at 4 Degrees above; so that in 4 Hours time, that without had risen thirteen Degrees and a half, and that within had fallen 1 Degree. This naturally led me to examine what Signs there might be of a Thaw begun, but could find none, in the Snow (which was 5 Inches deep) or in the Post, on the Windows, but within an Hour it was visible enough, and before 10 the Houses dropt. I would observe to you, that the Wind at 8 in the Morning had varied very little, if any, from what it was the Night before, *viz.* from the East, but soon after it bore to South-East and South.

May not this sudden Change of the Temper of the Air be attributed it to a subterranean Heat? And may not the shifting of the Wind be caused, in a great measure, by the same?

If you think these Observations may be acceptable to the Gentlemen of the *Royal Society*, who keep

a Register of the Weather, and may serve to persuade those, who have not yet tried it, to hang their Thermometers abroad, you have Leave to communicate it from their and

Tooting, Dec. 8.
1747.

Your most obedient Servant,

Henry Miles.

December 1747.

Days	Morning		Evening		
	Barom.	Ther.	Barom.	Ther.	
1	28 6 3	17 0	29 3 0	0 12	At 8 Morn. Wind high at S. W. much Rain preceding Night. Showery afterward in the Morning, and Wind exceeding high. Sleet at 1 $\frac{1}{2}$ p. m. calmer and clearer soon after, Wind N. W. and N. began to freeze in the Evening, clear at 9 $\frac{1}{2}$ p. m. when the Evening Account was set down.
2	29 5 5	0 0	29 4 0	0 2	At 8 Morn. cloudy thick Air, hard Frost; at 4 same Morn. very clear, and Glasses were at 29 5 0 and 0 and $\frac{4}{3}$ Wind East, cloudy all Day, at 4 $\frac{1}{2}$ p. m. Snow fell, and was deep before 8. Evening Account taken at 9 $\frac{1}{2}$ p. m.
3	29 5 6	3 $\frac{1}{2}$ 0 4	29 4 9	13 $\frac{1}{2}$ 0 0	At 8 Morn. cloudy, Wind at near East; blows brisk at 4 the same Morn. Glasses were 29 6 1 0 and $\frac{5}{9}$ Rain before 11. Evening Account at 9 $\frac{1}{2}$ p. m.
					Explication.

1 Day Barom. Morn. 28 Inches $\frac{6}{10}$ - $\frac{3}{100}$.
 Ditto. Therm. Morn. 17 is 17 Degrees above freezing Point
 the upper Number is for the Therm. without Doors, the
 lower for that in my Room, and so for the rest.